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Applicant: Sabanayagam et al.

Application No.: 09/886,779 Group No.: 1634

Filed: June 21, 2001 Examiner: F. Lu

FOR: NUCLEIC ACID ARRAYS AND METHODS OF SYNTHESIS

Assistant Commissioner for Patents
Washington, DC 20231

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CERTIFICATE OF MAILING

I hereby certify that this correspondence, on the date shown below, is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to Assistant Commissioner of Patents, Washington, DC 20231.

Date: 8/13/2002 Patricia W. Turner

Patricia W. Turner

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AMENDMENT

In response to the Amendment dated February 13, 2002, enclosed is a Petition for a Three Month Extension of Time and payment of fee. Please amend the above-described application as follows:

IN THE CLAIMS

Please add the following new claims:

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24. The ordered redundant array of claim 11, wherein said ordered redundant array has at least three copies of the sequence of interest extending in the Z dimension.

25. The ordered redundant array of claim 11, wherein said ordered redundant array has at least 10 copies of the sequence of interest extending in the Z dimension.

26. The ordered redundant array of claim 11, wherein said ordered redundant array has at least 50 copies of the sequence of interest extending in the Z dimension.

27. The ordered redundant array of claim 23, wherein said ordered redundant array has at least three copies of the sequence of interest extending in the Z dimension.

28. The ordered redundant array of claim 23, wherein said ordered redundant array has at least 10 copies of the sequence of interest extending in the Z dimension.

29. The ordered redundant array of claim 23, wherein said ordered redundant array has at least 50 copies of the sequence of interest extending in the Z dimension.

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30. An ordered redundant array of immobilized oligonucleotides comprising:

a solid support comprising a substrate, wherein said substrate contains i) a plurality of positions for oligonucleotides, said positions defined by x and y coordinates; ii) a plurality of identical oligonucleotides immobilized on the substrate, wherein each oligonucleotide comprises a sequence; and iii) extending from each said oligonucleotides along a z coordinate a plurality of unique circular DNA templates, each circular DNA template comprising a sequence of interest, wherein each said circular DNA template is hybridized to each said oligonucleotides by a region complementary to at least a portion of said sequence of said oligonucleotides, and wherein said sequence of interest is different for each circular template, wherein said circular template creates an extended immobilized oligonucleotide comprising at least two copies of said sequence of interest.

31. The ordered redundant array of claim 30, wherein said circular template creates an extended immobilized oligonucleotide comprising at least three copies of said sequence of interest.

32. The ordered redundant array of claim 30, wherein said circular template creates an extended immobilized oligonucleotide comprising at least 10 copies of said sequence of interest.

33. The ordered redundant array of claim 30, wherein said circular template creates an extended immobilized oligonucleotide comprising at least 50 copies of said sequence of interest.

REMARKS

Applicants have amended the claims by adding additional claims directed to preferred embodiments. These claims are supported throughout the specification and the figures. See particularly the specification at pp. 10-11 and Figure 1. As such, these amendments do not constitute new matter and their entry is respectfully requested.

Claims 11 and 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by Caviani Pease et al.

Applicants respectfully submit that this rejection should be withdrawn for the following reasons.

Applicants respectfully submit that this reference does not teach an ordered redundant array having the recitations cited in claims 11 and 23.

As explained in the specification, most currently produced arrays have certain deficiencies because people thought of the arrays being produced in two dimensions, i.e. in terms of X and Y coordinates, and do not fully take advantage of the Z coordinate. However, the present array takes advantage of the fact that the array is, in fact, three dimensional. Thus, the present array contemplates a solid support that positions for oligonucleotides that bind to the substrate in the X and Y coordinates, namely at each such coordinate with only the nucleotide immobilized. However, by the method in which the present array is produced, the Z coordinate is utilized so that on the immobilized oligonucleotide, the strand is extended in the Z dimension to contain, as in claims 11 and 23, at least two copies of the sequence of interest. (See p. 10 of the specification and Figure 1). The sequence of interest can be a portion of the sequence of a target of interest such as a cancer gene. That is defined by, for example, Step (d). Dependent claims refer to embodiments, where there are at least three copies of the sequence of interest, 10 copies and 50 copies.

By contrast, the ordered array of Caviani Pease et al. does not in any way teach an array wherein there are at least two or three copies and certainly not 10 or 50 copies of the sequence of interest extending in the Z dimension. Accordingly, there is no anticipation.

Claims 11 and 23 were also rejected under 35 U.S.C. § 102(e) as being anticipated by Chetverin et al.

Applicants respectfully submit that this rejection should be withdrawn for the following reasons.

As discussed above, the method that produces the array of the present invention requires that said array has at least two copies, and preferably at least three, 10 or 50 copies of the sequence of interest extending in the Z dimension. The ordered array described in Chetverin, while referring to a variable and constant region (see Figure 1A and the accompanying text), does not teach or require that said array must contain at least two copies of the sequence of interest extending in the Z dimension. It certainly in no way teaches an array with only 10 copies of the sequence of interest extending in the Z dimension as required by claims 25 and 29. It most certainly does not teach an ordered array where there are at least 50 copies of the sequence of interest extending along the Z dimension as required by claims 26 and 30.

As such, the rejection of these claims under 35 U.S.C. § 102(e) should be withdrawn.

In view of the foregoing, Applicants respectfully submit that all claims are in condition for allowance. Early and favorable action is requested.

Respectfully submitted,

/Ronald I Eisenstein/

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